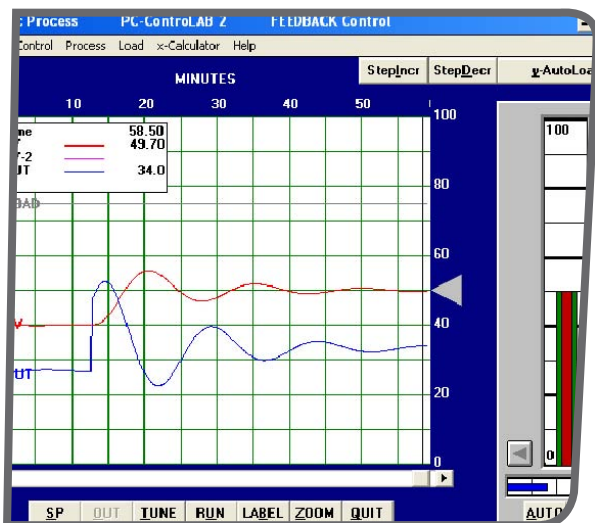


TUNING DDC/PROCESS CONTROL LOOPS

Optimize your process with proper setting and tuning of DDC or control loops to increase quality consistency.

Learn the process characteristics that become the basis for tuning the DDC or process controller. Practice different tuning methods to ensure accurate control. Gain an understanding of the functions of proportional band, integral and derivative process in a 3-mode or DDC controller.

Using computer simulation software in a "safe-to-experiment" environment and gain experience in efficient control loop tuning.



CLASS FORMAT:

Lab + classroom

The participant is able to "learn-by-doing" in the course; this knowledge can be transferred to the workplace.

STANDARD CLASS SIZE:

NTT recommends a class of no more than 12 participants for the best results

NTT PROVIDES:

- 2-days (16 contact hours) of on-site instruction
- Textbooks and lab manuals
- Classroom consumables
- Completion certificates
- Shipping and instructor travel logistics

CLIENT PROVIDES:

- Classroom, with easy access, of 750 square feet or greater
- Projection screen, white board and/or flip charts
- A dock facility or a forklift to unload the training equipment
- A pallet jack to move the crates around after they have been unloaded may also be needed
- Please place this equipment in the training room for the NTT instructor to test and setup prior to the start of class

SHIPPING

2 crates at 900 lbs

- 2 crates @ 49" x 35" x 76" each



TUNING DDC/PROCESS CONTROL LOOPS

COURSE AGENDA

PROCESS CHARACTERISTICS

- Process definition
- First order lag
- Dead time
- Time constant explanation
- Process gain
- Self-regulating versus non self-regulating processes
- Process gain

PID CONTROLLER PARAMETERS

- Proportional band
- Integral
- Derivative
- Tuning goals
- Relationship between proportional band and gain
- Units for integral or reset
- Quarter wave damping versus critical control
- Proportional band, integral and derivative relate to error

TUNING METHODS

- General method closed loop
- Ziegler-Nichols open loop methods
- Ziegler-Nichols closed loop method
- Improving as found tuning
- Ultimate period
- Process gain
- Open loop tuning
- Experienced based tuning

ADVANCED CONTROL

- Cascade control
- Ratio control
- Feed forward control
- "Wild Flow" in ratio control
- Feed forward control system
- Feedback penalty

LAB EXERCISES

- At least 50 percent of the class time
- PC-ControlLAB
- Process dynamic characteristics
- PID controller characteristics
- PID tuning from open loop tests
- PID tuning from closed Loop tests
- "As Found" PI tuning
- Cascade control
- Ratio control

